DOCUMENT RESUME

ED 439 390 CS 013 902

AUTHOR Fisher, Douglas; Lapp, Diane; Flood, James
TITLE Technology & Literacy: Is There a Positive Relationship?
PUB DATE 1999-00-00
NOTE 5p.
PUB TYPE Information Analyses (070) -- Journal Articles (080)
JOURNAL CIT The California Reader; v32 n4 p35-38 Sum 1999
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Mediated Communication; *Computer Uses in Education; Educational Technology; Elementary Secondary Education; Internet; *Literacy; Literature Reviews; Performance Based Assessment; *Portfolios (Background Materials); *Writing Instruction
IDENTIFIERS *Electronic Portfolios

ABSTRACT

As computers become an integral part of classrooms, educators need to determine if there are uses of computers that are supported by research. Recent research has examined uses of technology in the classroom for writing instruction, electronic literacy environment, and electronic portfolios. Results of these studies on writing instruction indicate that technology helps children to focus on content rather than mechanics; encourages the production of more and better developed essays; and reduces the drudgery of editing. Research also demonstrates that accessing electronic literacy environments produces: increased specialized vocabulary and coherence; wide-ranging possibilities for communication and expression; and improved mechanics of writing. In terms of electronic portfolios, studies demonstrate that they encourage students to align their school work with performance standards; provide an opportunity for students to share their literacy development with others; increase knowledge of technology; and improve literacy overall. With support, teachers can add powerful computing tools to the host of instructional strategies they use to engage students in meaningful instruction. (Contains 22 references.) (RS)

Reproductions supplied by EDRS are the best that can be made
from the original document.

CS-CIJE

ED 439 390

Douglas Fisher, Diane Lapp, & James Flood

Technology & literacy: Is there a positive relationship?

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Diane Lapp

Douglas Fisher

James Flood

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

D. Fisher

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

In this article, the authors explore three uses of technology in the classroom: writing instruction, electronic literacy environment, and electronic portfolios.

During the past decade the number of computers used in classrooms has significantly increased. In 1997, schools averaged one computer for every six students nationwide (Education Week, 1998); ten years ago there was approximately one computer for 30 students. The annual budget for school computers topped $5 billion last year (Education Week, 1998). Healy (1998) maintains we need to assess the impact of computers and technology on student literacy as schools attempt to expand the numbers of computers per classroom. We must determine, if, in fact, computers improve literacy. Healy (1999) also explains that we need to understand a complex set of issues: when should computers be introduced into our classrooms and what computer activities are most beneficial for students. It may very well be, as Reinking (1998) notes that "questions about whether students using word processing write as well or better than those using conventional materials have given way to questions about how students might adapt to and employ effectively electronic forms of reading and writing" (p. xxiv). As computers become an integral part of our classrooms, educators need to determine if there are uses of computers that are supported by research. In this article we explore three uses of technology in the classroom: writing instruction; electronic literacy environments; and electronic portfolios.

CS 013 902

BEST COPY AVAILABLE

Writing Instruction

Dahl and Farnan (1998) point out in their book *Children's Writing*, that computers and technology have significantly altered the ways in which people experience the world. Researchers have attempted to document positive outcomes when students use computers as part of their writing process program. As Dahl and Farnan note, the research results are complex. For example, Russell (1991), in her meta-analysis, found that the relationship between technology and writing was significantly influenced by the social interactions that students had in the computer lab, although the writing was higher quality when students used word processing software and computers.

In a study of first graders' use of word processing software, Jones and Pellegrini (1996) found that the technology facilitated the students' writing of narratives. These researchers hypothesized that the use of the computer shifted the focus away from the mechanical aspects of writing to focus on words and ideas. Similarly, in a case study of a 5-year-old writer, Cochran-Smith, Kahn, and Paris (1990) note that the computer provided a mechanism that supported the child's writing. More specifically, the computer allowed the child to focus more directly on her words and ideas than on her handwriting, letter formation, and alignment of words.

Similar results have been documented for older students as well. In their study of middle school students, Owston, Murphy, and Wideman (1992) found that students wrote higher quality essays using word processing software than they did when they wrote their essays in cursive. The students in their study were all experienced computer users. The researchers hypothesized that the reason for the high quality was related to the number of times students revised their work on the computer. Odenthal (1992) found similar results among second language learners. Haas (1989) documented similar results; she found that easy-to-use software programs facilitated the revision process. The results of these studies indicate that technology:

1. helps children to focus on content rather than mechanics;

2. encourages the production of more and better developed essays; and

3. reduces the drudgery of editing.

Electronic Literacy Environments

Research indicates a positive relationship between electronic environments and literacy (Baines, 1998; Beach & Lundell, 1998; Kieffer, Hale, & Templeton, 1998). Reading and writing in an electronic literacy environment differs from traditional classroom activities. Typically, when students are asked to write papers, they know their audience and the expectations of the teachers. However, in writing something for the web that anyone can read, students "place a premium on the paper's accuracy, use of technical and specialized vocabulary, and degree of coherence" (Alvarez, 1998, p.45).

In addition to publishing on the world wide web (WWW), a number of electronic conversations can be facilitated. Students can establish two kinds of conversations: asynchronous (such as email) or synchronous (such as chat rooms). Participants in these conversations are required to access prior knowledge, read strings of messages, provide written responses, and master the technology. All of these are useful skills and relate to overall literacy development. Interestingly, most students report enjoying the experience because, unlike face-to-face conversations, they are not interrupted when constructing their responses (Beach & Lundell, 1998).

For example, Garner and Gillingham (1998) describe a series of internet interactions that students have. In a year-long partnership, students in two classrooms are introduced, thus providing an opportunity for Yup'ik Eskimo children and adolescents the opportunity to practice speaking, reading, and writing their second language, English. The authors note that bilingualism was important to this village, located 300 miles from the nearest road. The internet was one of the few places that English could be practiced authentically and comfortably. The teachers observed significant progress for both groups of students, noting "unity of expression, increased grammatical competence, and improvement in the mechanics of spelling, capitalization, and punctuation" (p. 223). These studies demonstrate that accessing electronic literacy environments produces:

1. increased specialized vocabulary and coherence;

2. wide ranging possibilities for communication and expression; and

3. improved mechanics of writing.

Electronic Portfolios

Authentic assessments, such as portfolios, have been a significant focus for assessment professionals and teachers during the past decade (Flippo, 1997; Valencia, Hiebert, & Afflerbach, 1994). The need to document learning and progress beyond standardize tests, as well as the desire to showcase exemplary pieces of student work, has provided the impetus for new types of portfolios (Kieffer & Morrison, 1994). Portfolios can look like scrapbooks, folders, photo albums, or file cabinets.

As a result, a number of electronic versions of portfolios have been developed. Some of them are pre-programmed such as the Grady Profile (Grady, 1991). Others are developed by professional organizations or teachers. For example, the Annenberg Institute for School Reform and the Coalition of Essential Schools have been investigating digital portfolios and software programs that create a multimedia collection of student work (Niguidula, 1995). Still others require that students create their own versions by using word processing and multimedia software (Kieffer, Hale, & Templeton, 1998).

Electronic portfolios require that students access technology while demonstrating their personal growth. Students can collect artifacts for their portfolios and align them with the performance standards of the school (Fisher, Sax, & Jorgensen, 1998). For example, students may be expected to demonstrate their ability to read, write, speak and listen for a variety of purposes and audiences. Their portfolios should contain evidence, across grade levels, that they accomplished this standard. Some students will choose to store electronic versions of text in their portfolios. Others will scan photos, sound clips, or video clips into a software program for later use. Still others will use multimedia authoring software and CD-ROMs to increase the interactivity the reviewer has with the contents.

In a recent study of the outcomes of electronic portfolios, Hedberg (1998) studied 60 high school students. He documented increased knowledge of technology, increased literacy skills, and increased interest in science when his students were required to maintain and submit electronic portfolios of the work. He hypothesizes that the effect of electronic portfolios is due in a large part to the increase the ownership and pride by students. He notes that students in his classes had basic computer skills and most could type. Again, the implications for teachers are clear - student need access to computers, word processing software, and keyboarding if they are to participate in many of these electronic literacy events. These studies demonstrate that the use of electronic portfolios:

1. encourage students to align their school work with performance standards;

2. provide an opportunity for students to share their literacy development with others;

3. increase knowledge of technology; and

4. improve literacy overall.

Conclusions

We offer a qualified *yes* to the question, "Are computers a welcome addition to the classroom?" When computers are used as an instructional tool by teachers who have received appropriate training and support, the money is well spent. However, the lack of appropriate staff development can result in expensive equipment sitting unused. Computers will be a part of the twenty-first century and our students will use them for a variety of reasons including internet access, writing, recordkeeping, and email. With support, teachers can add this powerful tool to the host of instructional strategies they use to engage students in meaningful instruction.

References

Alvarez, M.C. (1998). Developing critical and imaginative thinking within electronic literacy. *NASSP Bulletin, 82*, 41-47.

Baines, L. (1998). The future of the written word. In J.S. Simmons & L. Baines (Eds.), *Language study in middle school, high school, and beyond* (pp. 190-214). Newark, DE: International Reading Association.

Beach, R., & Lundell, D. (1998). Early adolescents' use of computer-mediated communication in writing and reading. In D. Reinking, M.C. McKenna, L.D. Labbo, & R.D. Kieffer (Eds.), *Handbook of literacy and technology* (pp. 93-112). Mahwah, NJ: Lawrence Erlbaum Associates.

Cochran-Smith, M., Kahn, J., & Paris, C.L. (1990). Writing with a felicitous tool. *Theory Into Practice, 29*, 235-247.

Dahl, K.L., & Farnan, N. (1998). *Children's writing: Perspectives from research.* Newark, DE: International Reading Association and National Reading Conference.

Education Week. (1998, October 1). *Technology counts '98: Putting school technology to the test. Bethesda,* MD: Author.

Fisher, D., Sax, C., & Jorgensen, C. (1998). Philosophical foundations of inclusive, restructuring schools. In C. Jorgensen (Ed.), *Restructuring high schools for all students* (pp. 29-48). Baltimore: Paul H. Brookes.

Flippo, R.F. (1997). *Reading assessment and instruction: A Qualitative approach to diagnosis.* New York: Harcourt Brace.

Garner, R., & Gillingham, M.G. (1998). The internet in the classroom: Is it the end of transmission-oriented pedagogy? In D. Reinking, M.C. McKenna, L.D. Labbo, & R.D. Kieffer (Eds.), *Handbook of literacy and technology* (pp. 221-231). Mahwah, NJ: Lawrence Erlbaum Associates.

Grady, E.L. (1991). *Grady profile portfolio assessment: A performance-based assessment tool for teachers.* St. Louis, MO: Aurbach & Associates.

Haas, C. (1989) Does the medium make a difference: Two studies of writing with computers. *Human Computer Interaction, 4,* 149-169.

Healy, J.M. (1998, October 7). The 'meme' that ate childhood. *Education Week, 18* (6), 56, 37.

Hedberg, P. (1998). *Electronic Portfolios: Preparing the future workforce.* Unpublished master's thesis, San Diego State University, San Diego, CA.

Jones, I., & Pellegrini, A.D. (1996). The effects of social relationships, writing media, and microgenetic development of first-grade students' written narratives. *American Educational Research Journal, 33*, 691-718.

Kieffer, R.D., Hale, M.E., & Templeton, A. (1998). Electronic literacy portfolios: Technology transformations in a first-grade classroom. In D. Reinking, M.C. McKenna, L.D. Labbo, & R. D. Kieffer (Eds.), *Handbook of literacy and technology* (pp. 145-164). Mahwah, NJ: Lawrence Erlbaum Associates.

Kieffer, R.D., & Morrison, L.S. (1994). Changing portfolio process: One journey toward authentic assessment. *Language Arts, 71* (6), 411-418.

Niguidula, D. (1995). Picturing performance with digital portfolios. *Educational Leadership, 55* (3), 26-19.

Odenthal, J.M. (1992). *The effect of a computer-based writing program on the attitudes and performance of students acquiring English as a second language.* Unpublished Doctoral dissertation, San Diego State University & Claremont Graduate University, San Diego, CA.

Owston, P.D., Murphy, S., & Wideman, H.H. (1991). On and off computer writing of eighth grade students experienced in word processing. *Computers in the Schools, 8*, 67-87.

Reinking, D. (1998). Introduction: Synthesizing technological transformations of literacy in a post-typographic world. In D. Reinking, M.C. McKenna, L.D. Labbo, & R. D. Kieffer (Eds.), *Handbook of literacy and technology* (pp. xi-xxx). Mahwah, NJ: Lawrence Erlbaum Associates.

Russell, R. G. (1991, April). *A meta-analysis of word processing and attitudes and the impact on the quality of writing.* Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

Valencia, S.W., Hiebert, E.H., & Afflerbach, P.P. (1994). *Authentic reading assessment: Practices and possibilities* Newark, DE: International Reading Association.

Douglas Fisher is an Assistant Professor in the College of Education, Department of Teacher Education, at San Diego State University,

Dr. Diane Lapp and Dr. James Flood are Professors of Reading and Language Development at San Diego State University.